

WHAT IS CLAIMED IS: Double-click for Instructions

- 1           1.     A method for quantizing information, comprising:  
2                     generating a first pulse stream containing at least one pulse and a plurality  
3     of zero values; and  
4                     convolving the first pulse stream with a second signal to produce a third  
5     signal, wherein the step of convolving does not multiply at least one zero value of the  
6     first pulse stream with a respective value of the second signal.
- 1           2.     The method of claim 1, wherein the step of convolving does not multiply a  
2     substantial number of zero values of the first pulse stream with respective values of the  
3     second signal.
- 1           3.     The method of claim 2, wherein the step of convolving does not multiply  
2     essentially all of the zero values of the first pulse stream with respective values of the  
3     second signal.
- 1           4.     The method of claim 3, wherein the step of convolving only multiplies the  
2     pulses in the first pulse stream with respective values of the second signal.
- 1           5.     The method of claim 4, wherein each of the pulses of the first pulse shown  
2     has a value of the one of +1 and -1.
- 1           6.     The method of claim 4, wherein the quantization is based on a multipulse-  
2     maximum likelihood quantization (MP-MLQ) protocol.
- 1           7.     The method of claim 4, wherein the quantization is based on an algebraic-  
2     codebook excited linear-predicted (ACELP) protocol.
- 1           8.     The method of claim 4, wherein the first pulse stream is an excitation  
2     signal.
- 1           9.     The method of claim 8, wherein the second signal is an impulse response.
- 1           10.    A device for quantizing information, comprising:  
2                     a generator that generates at least a first pulse stream containing a number  
3     of non-zero values and plurality of zero values; and  
4                     a convolution device that convolves the first pulse stream with a second  
5     signal to produce a quantized signal;  
6                     wherein the convolution device does not multiply at least one zero value  
7     of the first pulse stream with a respective value of the second signal.

1           11.    The device of claim 11, wherein the convolution device does not multiply  
2 a substantial number of zero values of the first pulse stream with respective values of the  
3 second signal.

1           12.    The device of claim 12, wherein the convolution device does not multiply  
2 essentially all of the zero values of the first pulse stream with respective values of the  
3 second signal.

1           13.    The device of claim 13, wherein the convolution device only multiplies  
2 the pulses in the first pulse stream with respective values of the second signal.

1           14.    The device of claim 10, wherein the first pulse stream is an excitation  
2 signal.

1           15.    The device of claim 14, wherein the second signal is an impulse response.

1           16.    The device of claim 14, wherein the excitation signal is based on a  
2 multipulse-maximum likelihood quantization (MP-MLQ) protocol.

1           17.    The device of claim 14, wherein the excitation signal is based on an  
2 algebraic-codebook excited linear-predicted (ACELP) technique.

1           18.    A method for generating a communication signal, comprising:  
2                   receiving a first pulse stream containing a number of pulses and plurality  
3 of zero values;  
4                   convolving the first pulse stream with a second signal to produce the  
5 communication signal, wherein the step of convolving does not multiply at least one zero  
6 value of the first pulse stream with a respective value of the second signal.

1           19.    The method of claim 18, wherein the step of convolving does not multiply  
2 essentially all of the zero values of the first pulse stream with respective values of the  
3 second signal.

1           20.    The method of claim 19, wherein the step of convolving only multiplies  
2 the pulses in the first pulse stream with respective values of the second signal.

1           21.    The method of claim 20, wherein the first pulse stream is an excitation  
2 signal and the second signal is an impulse response.

1           22.    The method of claim 20, wherein the communication signal is a residual  
2 signal.

- 1           23.    A device for generating a communication signal, comprising:  
2                   a convolution device that convolves a first pulse stream with a second  
3                   signal to produce the convolved signal, wherein the first pulse stream at least one pulse  
4                   and a plurality of zero values; and  
5                   a speech processor that processes the convolved signal using a filter to  
6                   generate the communication signal;  
7                   wherein the convolution device does not multiply at least one zero value  
8                   of the first pulse stream with a respective value of the second signal.
- 1           24.    The device of claim 23, wherein the convolution device does not multiply  
2                   essentially all of the zero values of the first pulse stream with respective values of the  
3                   second signal.
- 1           25.    The device of claim 24, wherein the convolution device only multiplies  
2                   the pulses in the first pulse stream with respective values of the second signal.
- 1           26.    The device of claim 25, wherein the first pulse stream is an excitation  
2                   signal and the second signal is an impulse response.
- 1           27.    The device of claim 25, wherein the communication signal is a residual  
2                   signal.